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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,742	02/18/2004	Go Miya	648.42568VX1	2055

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ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-3873

EXAMINER
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KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/779,742

Applicant(s)

MIYA ET AL.

Examiner

Ram N. Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8 and 9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 8 and 9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al (US 6,825,920).**

Lam et al teach a plasma processing method and determination of chamber seasoning condition (Abstract) comprising a process chamber (Fig 2); a light-receiving part (50) for monitoring a plasma emission in the process chamber; a radiation emission processor such as an optical emission spectrometer (Col 4 lines 52-67); an a plasma process analyzer such as a computer for receiving and storing the digitized signals from the processor (55), analyzing the data and controlling the apparatus (Col 2 lines 25-37), the plasma processing method comprises

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monitoring of the process using *multivariate statistical analysis of plasma emission spectra* including: a step of converting the multi-channel signal output from the spectrometer unit into a series (*batch*) of output signals; and performing a principal component analysis on the data which includes finding the differences (Col 11 62- Col 12 line 17) between the output signal collected during the processing intervals (*preceding batch*) (Col 7 lines 16- Col 11 line 30); and comparing the differences to a threshold (Claim10). Lam et al disclose determination of differences from substrate to substrate (Col 11 lines 1-10) and compare it with a threshold (Fig 13-790 and Col 2 lines 26-37) and teach that the differences could be from the output of substrate run to PCA model (Principal Component analysis-multivariate analysis) and undergo statistical analysis like standard deviation (Col 9 lines 1-12).

Lam et al do not explicitly disclose average and difference of Maximum and Minimum difference.

However, since determination of average and difference of maximum and minimum is essential for finding variance and therefore a measure of the process condition (Seasoning), it is obvious to determine that in addition to standard deviation as discloses by Lam et al.

**Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al (US 6,825,920) in view of admitted prior art (Fig. 13, 14 and pages 1-11) and Kaji et al (US 6,716,300 B2).**

Lam et al teach a method of monitoring the status of a seasoning process using an optical emission spectrometry techniques as discussed above.

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Lam et al fail to teach a step of performing evacuation after a wet cleaning; a step of automatically determining whether a degree of vacuum is adequate or not.

Admitted prior art (page 6) teaches a step of evacuating the process chamber after a wet cleaning step, wherein the chamber is evacuated to a predetermined degree of vacuum before a step of dry cleaning is carried out.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the wet cleaning step and the evacuation step as taught by the admitted prior art in the plasma processing method of Le et al in order to clean and maintain the chamber under a predetermined evacuation level suitable before the step of plasma processing the wafer.

Lam et al also fail to teach a step of automatically determining whether there is an apparatus abnormality or not.

Kaji et al teach a method of monitoring a plasma processing apparatus using optical emission spectrometry, wherein an abnormality of the plasma processing is prevented in advance by issuing an abnormality signal, an alarm display or terminating a succeeding treatment in the case where the rate of the change should exceed a predetermined value (column 11, lines 55-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the step of determining the abnormality as taught by Kaji et al in the method of Lam et al in order to terminate a succeeding treatment when an abnormality in the processing of the apparatus is detected.

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***Response to Arguments***

Applicant's arguments filed 2/17/2005 have been fully considered but they are not persuasive.

Applicant's argument regarding comparison of differences has been addressed in the new grounds of rejection presented in this office action.

Regarding applicants arguments related to determination of seasoning condition using multivariate analysis (filter vector) also has been addressed in the new grounds of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

✓

RK

*p-l*  
**PARVIZ HASSEZADEH**  
**SUPERVISORY PATENT EXAMINER**